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SCANNING PHASE MEASURING METHOD AND SYSTEM FOR AN OBJECT AT A VISION STATION

Abstract

A method and system are provided including an
5 optical head which moves relative to an object at a
vision station to scan a projected pattern of imagable
electromagnetic radiation across the surface of an
object to be inspected at a relatively constant linear
rate to generate an imagable electromagnetic radiation
10 signal. In one embodiment, the electromagnetic radia-
tion is light to develop dimensional information associ-
ated with the object. The optical head includes at
least one projector which projects a grid of lines and
an imaging subsystem which includes a trilinear array
15 camera as a detector. The camera and the at least one
projector are maintained in fixed relation to each
other. Three linear detector elements of the array
camera extend in a direction parallel with the grid of
lines. The geometry of the optical head is arranged in
20 such a way that each linear detector element picks up a
different phase in the grid pattern. As the optical
head is scanned across the surface of interest, the
detector elements are continuously read out. Depth at
each point on the surface is calculated from the inten-
25 sity reading obtained from each of the detector elements
that correspond to the same point on the surface. In
this way, the phases of the pattern are calculated from
the three intensity readings obtained for each point.
In another embodiment, the imagable electromagnetic
30 radiation is polarized and the response of the detector
elements is polarization sensitive. The generated
images are based on polarization for the surface.